EFFECTS OF $KCLO_3$ DOSES ON BACTERIAL COMMUNITIES IN SOIL CROPPED TO 'E-DAW' LONGAN (*DIMOCARPUS LONGAN* L.) AT THE AGE OF 8 AND 11-YEARS-OLD

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ABSTRACT

This study was aimed to determine the effects of $KClO_3$ doses on the diversity of bacterial communities in the soil of 'E-Daw' longan orchards at the age of 8- and 11-years-old. Experiments were carried out off-season, from February 2018 to February 2019, in Dong Thap province, Viet Nam. A field trial was arranged in randomized complete block design with two factors, each of which had three replications, forty trees per replication. The two levels of tree age, *i.e.* 8- and 11-years-old comprising the first factor; while the second covering the five doses of $KClO_3$, viz. 50g, 100g, 150g, and 200g active ingredient (a.i.) m^{-1} canopy diameter (c.d.) and 2 control treatments (130 and 170 g a.i. m^{-1} c.d. for 8- and 11-years-old trees, respectively). The latter originated from the doses used by growers at the planting location. $KClO_3$ was applied by collar drenching. Fingerprints of 16S rDNA gene of bacterial diversity were amplified by polymerase chain reaction (PCR) and subjected to separation by denaturing gradient gel electrophoresis (DGGE). The latter was estimated by the number of amplified 16S rDNA bands, each of which was assumed to represent a single operational taxonomic unit. Results showed that 8-year-old trees had lower root tip damage rate than that of 11-year-old ones. In DGGE patterns, there was a reduction in the number of bands in all treatments applied with $KClO_3$ regardless of dose levels. In fact, the most significant difference was observed in the two control treatments. It is interesting that $KClO_3$ applied at 150g a.i. m^{-1} c.d. and 200g a.i. m^{-1} c.d. significantly stimulated the population of some specific groups of soil bacteria. These results indicated that the bacterial communities in soil cropped to 'E-Daw' longan were strongly affected by the $KClO_3$ application.

Keywords: 'E-Daw' longan, *Dimocarpus longan*, diversity, bacterial communities, $KClO_3$, tree age